b) extending the hybridized signal primer on the target sequence to produce a signal primer extension product and extending the hybridized first amplification primer on the target sequence such that extension of the first amplification primer displaces the signal primer extension product from the target sequence;

c) hybridizing a second amplification primer to the signal primer extension product and extending the hybridized second amplification primer on the signal primer extension product to produce a second amplification primer extension product comprising a newly synthesized strand;

d) displacing the newly synthesized strand from the signal primer extension product; and

e) hybridizing the signal primer to the displaced newly synthesized strand and extending the signal primer such that a double stranded secondary amplification product is generated.

29. (Twice Amended) A method for concurrently generating a secondary amplification product and an amplification product in a primer based nucleic acid amplification reaction, the method comprising:

a) hybridizing a first signal primer to a first strand of a double-stranded target sequence and hybridizing a first amplification primer to the first strand of the target sequence upstream of the first signal primer, wherein a characteristic of said signal primer is that it may not function as an amplification primer;

b) extending the hybridized first signal primer on the first strand to produce a first extension product and extending the hybridized first amplification primer on the first strand such that extension of the first amplification primer displaces the first extension product from the target sequence;

c) hybridizing a second signal primer to the first extension product and hybridizing a second amplification primer to the first extension product upstream of the second signal primer;

d) extending the hybridized second signal primer on the first extension product to produce a second extension product and extending the hybridized second amplification primer on the first extension product such that extension of the second amplification primer displaces the second extension product from the first extension product; and

e) hybridizing the first signal primer to the displaced second extension product and extending the hybridized first signal primer on the second extension product such that a double stranded secondary amplification product is generated.

[43. A signal primer comprising:

a) a target binding sequence which hybridizes to a target sequence at a position downstream of the position where a nucleic acid amplification primer hybridizes to the target sequence;

b) a 3' end which is extendable to generate a signal primer extension product, said signal primer extension product displaceable from the target sequence by extension of the nucleic acid amplification primer; and

c) a means for detecting the signal primer extension product.]

[44. The signal primer of claim 43 wherein said means for detecting the signal primer extension product is selected from the group consisting of size which differs from that of a nucleic acid primer amplification product, chemical modification, special nucleotide sequence, and a structural feature.]

[45. The signal primer of claim 44 wherein said chemical modification is selected from the group consisting of an affinity ligand and a reporter group.]

[46. The signal primer of claim 45 wherein said affinity label is selected from the group consisting of avidin, streptavidin, biotin, haptens, antigens and antibodies.]

[47. The signal primer of claim 45 wherein said reporter group is selected from the group consisting of radioisotopes, fluorescent dyes, enzymes which react to produce detectable reaction products and visible dyes.]

[48. The signal primer of claim 44 wherein said special nucleotide sequence is selected from the group consisting of sequences which will form a triple helix by hybridization an oligonucleotide probe to a double stranded amplification product comprising a signal primer extension product hybridized to an amplification primer extension product and recognition sequences for double-stranded nucleic acid binding proteins.]

[49. The signal primer of claim 44 wherein said structural feature comprises a nucleotide sequence which results in a double stranded restriction endonuclease recognition site in a secondary amplification product.]